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Analysis of antibodies against *Mycoplasma bovis* in bulk tank milk

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BACKGROUND

The Danish cattle industry have had increased focus on *Mycoplasma bovis* infections since 2011 due to an increasing number of cattle herd outbreaks of *Mycoplasma bovis*-associated disease, including some with serious and atypical clinical presentations. Antibody measurements on bulk tank milk have been used as a diagnostic tool for other infections, because it is easy and cheap to use. However, the relevance and limitations for *Mycoplasma bovis* diagnosis on herd level has not been investigated



OBJECTIVE

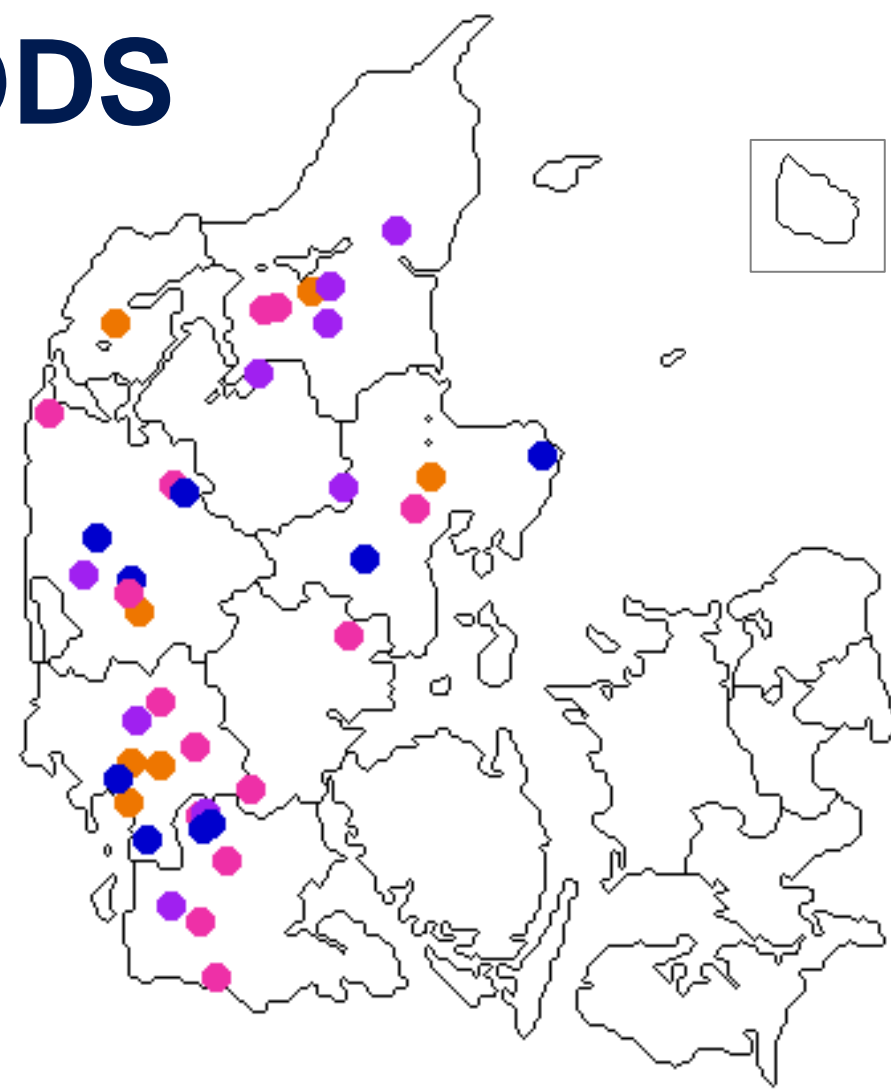
To analyse factors that influences the variation in bulk tank milk ELISA ODC% against *Mycoplasma bovis* in Danish dairy herds.

METHODS

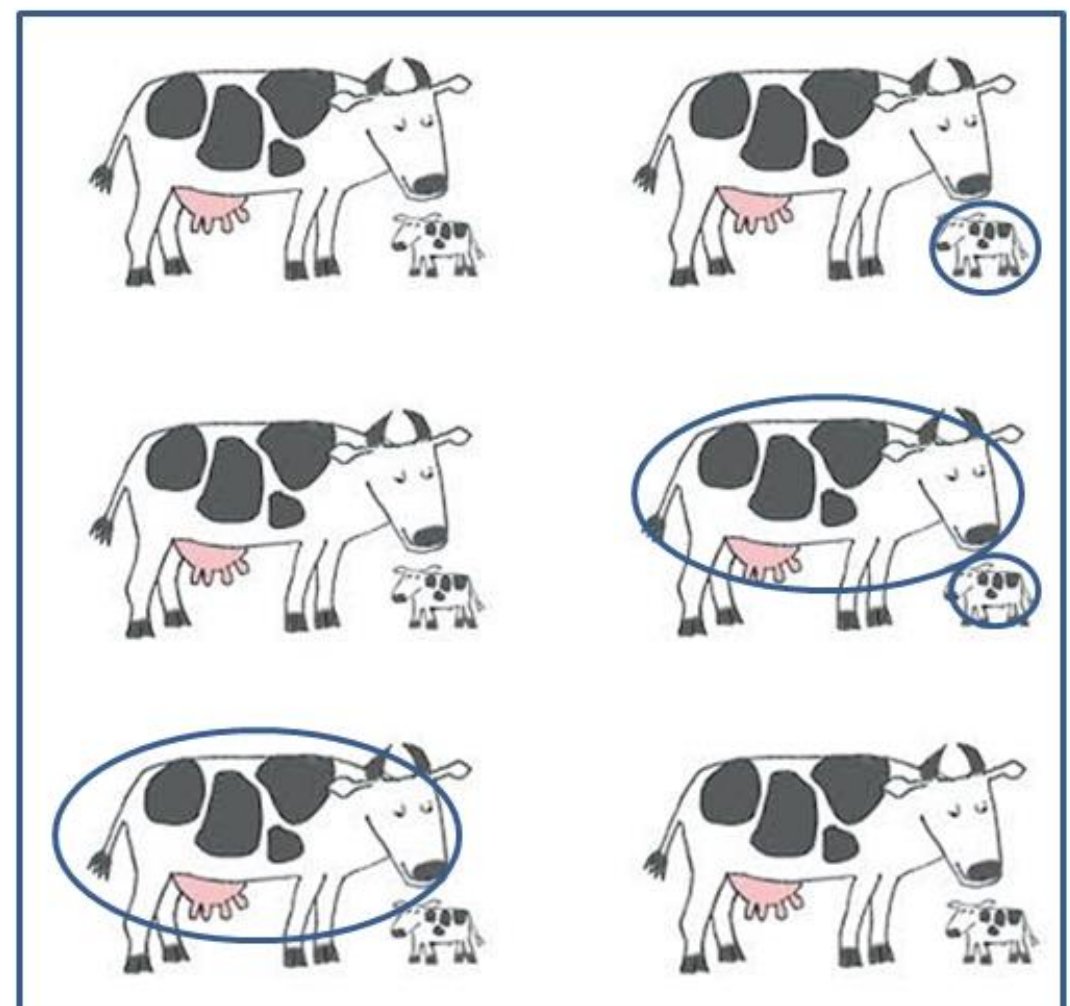
39 Danish dairy herds
Selected based on

- **Recent** or **previous** presence of clinical signs
- High bulk tank milk **serology**
- **Absence** of clinical signs associated with *Mycoplasma bovis*

Each herd visited 4 times and sampled as shown to the right



A bulk tank milk sample



Blood samples from 60 young stock

Milk samples from 50 lactating cows



Questionnaire interviews about outbreak of disease

VARIABLES

Outcome: Bulk tank milk (BTM) ODC%

Explanatory: Prevalence of antibody positive young stock (≥ 37 ODC%)

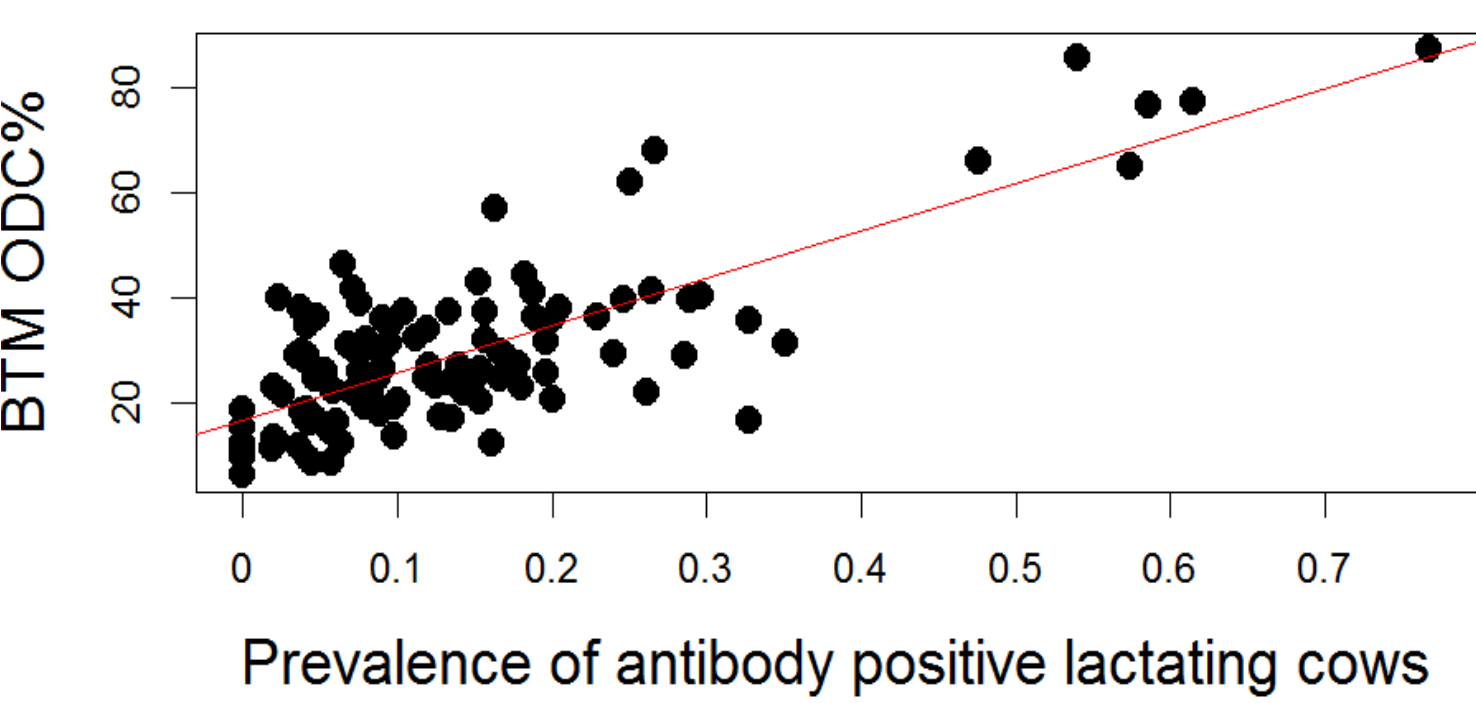
Prevalence of antibody positive lactating cows (≥ 37 ODC%)

Clinical disease at sample time or not

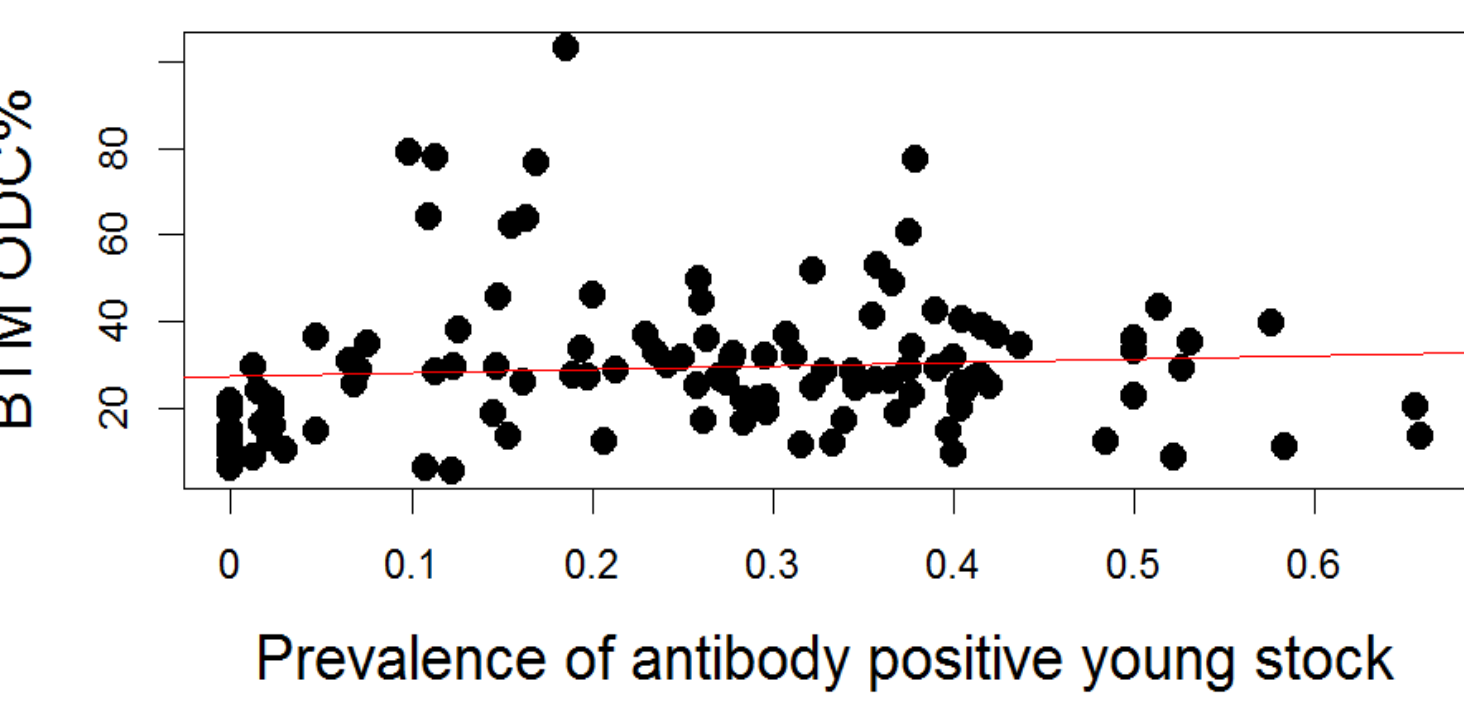
Number of lactating cows (herd size)

RESULTS

Good correlation between bulk tank milk ELISA values (ODC%) and the prevalence of antibody positive lactating cows



No correlation between bulk tank milk ELISA values (ODC%) and the prevalence of antibody positive young stock



Generalised linear mixed model with herd as a random effect

Variables			
Random effects	Variance	S.D.	
Herd	18	4	
Residuals	69	8	
Fixed effects	Estimate	S.E.	P-value
BTM ODC%	11	3	
Prevalence of AB positive lactating cows (pr.10%)	8	0.7	<0.001
Herd size (pr. 100 cows)	2	1	0.05
Clinical signs	18	6	0.003
4 month post clinical signs	22	6	<0.001
Herd size : Clinical signs	-5	2	0.004
Herd size : 4 month post clinical signs	-5	2	0.01

CONCLUSION

Prevalence of antibody lactating cows and presence of clinical signs was associated with higher BTM ODC%. Increasing herd size was negatively associated with BTM ODC%. *Mycoplasma bovis* status in young stock is not reflected in BTM.